

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listing of claims in the application:

LISTING OF THE CLAIMS

1. (Currently Amended) A heat transfer device for removing heat energy from a plurality of electronic components separated from one another, the heat transfer device comprising:

 a heat exchange structure containing a working fluid in a substantially closed envelope defining an evaporator and a condenser that are coupled by a vapor line and a liquid return line to provide a circulating path for the working fluid, through vaporization of a liquid phase of the working fluid at the evaporator, condensation of a vapor phase of the working fluid at the condenser, and return of the working fluid from the condenser to the evaporator through said liquid return line;

 wherein the evaporator comprises a bottom wall having a first portion at least partially defining a reservoir, and second and third portions elevated with respect to the first portion and each at least partially defining a respective evaporation chamber adjacent the reservoir, the reservoir in flow communication with the liquid return line and positioned below a turret that defines a vapor accumulator arranged in flow communication with said vapor line, the evaporation chambers separated by the reservoir, each of the second and third portions of the wall positioned for application of heat energy from distinct ones of the electronic components, and said two evaporation chambers commonly supplied with the liquid phase of the working fluid from the reservoir that is below said vapor accumulator;

a wicking material on the second and third portions of the bottom wall, wherein the reservoir contains the liquid phase of the working fluid to a level that is disposed below said evaporation chambers, covering the first portion of the bottom wall with the liquid phase, and leaving the wicking material on the second and third portions of the bottom wall exposed.

2. (Previously Presented) The heat transfer device according to claim 1, wherein the evaporator consists essentially of an integral vessel comprising thermally conductive material, said evaporation chambers being located at spaced positions on the integral vessel.

3. (Canceled)

4. (Currently Amended) The heat transfer device according to claim 1, wherein the reservoir is coupled to at least one of the evaporation chambers by [[a]] the wicking material on the bottom wall, wherein the wicking material supporting supports capillary flow of the liquid phase of the working fluid.

5. (Previously Presented) The heat transfer device according to claim 1, wherein the reservoir is defined by at least one recessed well positioned below said turret in an enclosure defining the evaporator, said evaporation chambers being located between walls of the enclosure.

6.-13. (Canceled)

14. (Previously Presented) The heat transfer device according to claim 5, further comprising a vapor outlet opening into said turret so as to be in flow communication with said vapor accumulator, whereby vapor from the evaporation chambers diffuses commonly into the vapor outlet.

15. (Currently Amended) A heat transfer device for removing heat energy from a plurality of electronic components separated from one another, the heat transfer device comprising:

a heat exchange structure containing a working fluid in a substantially closed envelope defining an evaporator including a vapor accumulator in flow communication with a vapor line, a condenser coupled to said evaporator by said vapor line, and a liquid return line to provide a circulating path for the working fluid, through vaporization of a liquid phase of the working fluid at the evaporator, condensation of a vapor phase of the working fluid at the condenser, and return of the working fluid from the condenser to the evaporator through said liquid return line;

wherein the evaporator comprises a bottom wall having a first portion at least partially defining a reservoir, and second and third portions elevated with respect to the first portion and each at least partially defining a respective evaporation chamber adjacent the reservoir, the reservoir in flow communication with the liquid return line, the two evaporation chambers separated by the reservoir, each of the second and third portions of the wall positioned for application of heat energy from distinct ones of the electronic components and commonly supplied with the liquid phase of the working fluid from the reservoir;

a wicking material on the second and third portions of the bottom wall, wherein the reservoir contains the liquid phase of the working fluid to a level that is disposed below said evaporation chambers, covering the first portion of the bottom wall with the liquid phase, and leaving the wicking material on the second and third portions of the bottom wall exposed.

16. (Currently Amended) A heat transfer device for removing heat energy from a plurality of electronic components separated from one another, the heat transfer device comprising:

a heat exchange structure containing a working fluid in a substantially closed envelope defining (i) an evaporator including a turret that defines a vapor accumulator arranged in flow communication with a vapor line, and (ii) a condenser that is coupled to said evaporator by said vapor line and said liquid return line so as to provide a circulating path for the working fluid, through vaporization of a liquid phase of the working fluid at the evaporator, condensation of a vapor phase of the working fluid at the condenser, and return of the working fluid from the condenser to the evaporator through said liquid return line;

wherein the evaporator comprises a bottom wall having a first portion at least partially defining a reservoir, and second and third portions elevated with respect to the first portion and each at least partially defining a respective evaporation chamber adjacent the reservoir, the reservoir in flow communication with the liquid return line, the evaporation chambers separated by the reservoir, each of the second and third portions of the wall positioned for application of heat energy from distinct ones of the electronic components, said two evaporation chambers commonly supplied with the liquid phase of the working fluid from the reservoir;

a wicking material on the second and third portions of the bottom wall, wherein the reservoir contains the liquid phase of the working fluid to a level that is disposed below said evaporation chambers, covering the first portion of the bottom wall with the liquid phase, and leaving the wicking material on the second and third portions of the bottom wall exposed.

17. (Previously Presented) The heat transfer device according to claim 15, wherein at least two of the distinct electronic components produces a different level of heat energy.

18. (Previously Presented) The heat transfer device according to claim 15, wherein at least one evaporation chamber is supplied with the liquid phase of the working fluid from the reservoir by a wicking structure.

19. (Previously Presented) The heat transfer device according to claim 16, wherein at least two of the distinct electronic components produces a different level of heat energy.

U.S. Patent Application No. 10/685,954
Amendment and Response dated April 30, 2008
Reply to Office Action mailed October 31, 2007
Attorney Docket No. 022232-9050-00

20. (Previously Presented) The heat transfer device according to claim 16, wherein at least one evaporation chamber is supplied with the liquid phase of the working fluid from the reservoir by a wicking structure.